"I feel all dizzy, doctor,

…you know, giddy, woozy……."

The Dizzy Patient

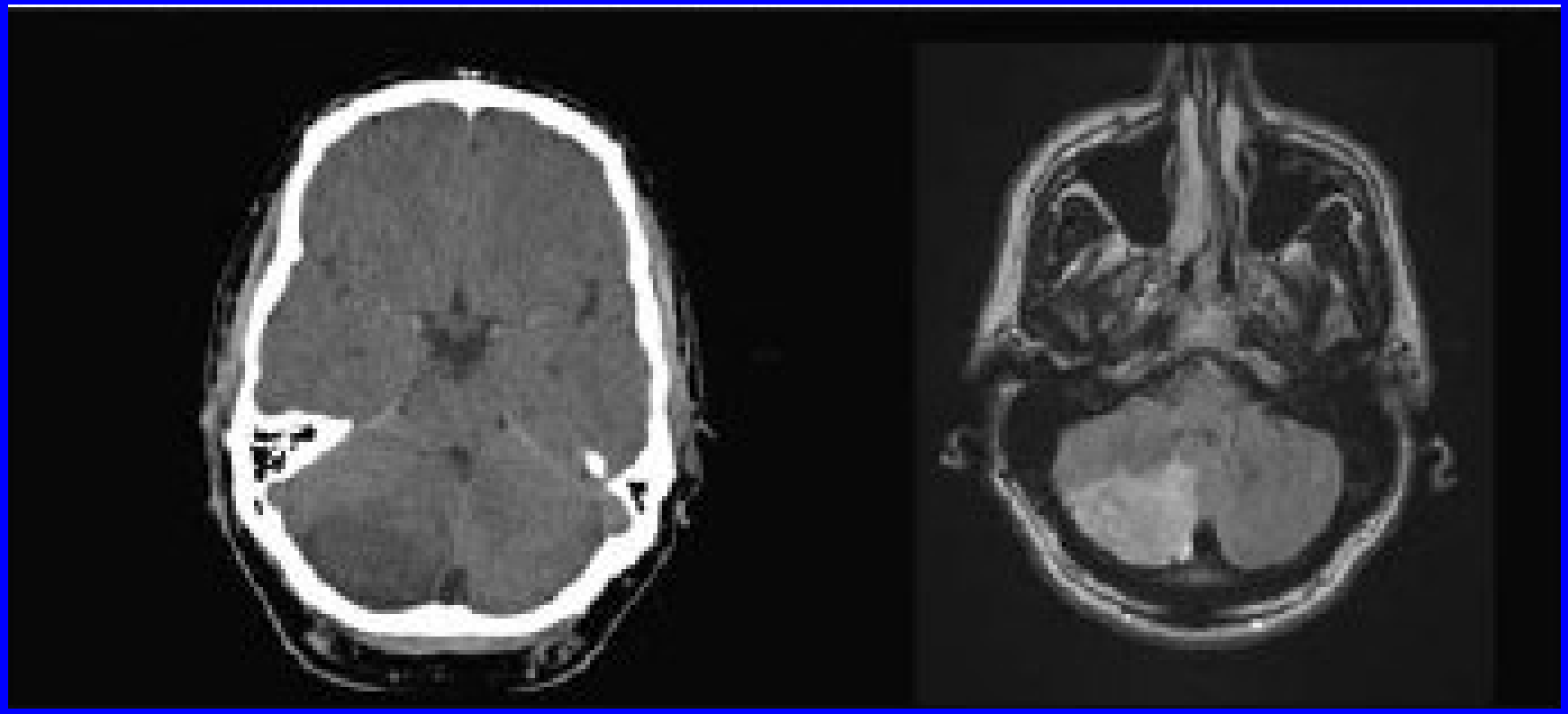
Allyson Parry,
Dept. Neurology, JRH

Example Case

- 56 yr man
- Presented 24 hours after the onset of acute dizziness, which occurred as he bent down in the garden
- Dizziness has persisted + nausea and vomiting
- Previously well

- What other questions do you ask?
- What do you look for on examination
- Are you going to refer him urgently?

What did the scan show?



Why is this dangerous ?

Warning

- Although isolated vertigo is OFTEN "benign" it can also occur in life-threatening conditions such as cerebellar stroke
- An isolated cerebellar stroke may mimic a peripheral syndrome
- Vertigo is the commonest symptom in patients with strokes isolated to the cerebellum in addition to sometimes being the ONLY symptom

- **“Yes, but we see HUNDREDS of patients that are dizzy……..”**

Content

- Why are they dizzy?
- Pathophysiology of vertigo
- Dangerous things you shouldn't miss
- Can you tell "central" from "peripheral" vertigo?
- Specific history and examination of patients with vertigo
- Who should I refer urgently?
- Common causes of vertigo
- Summary

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Why are they dizzy?

- Is it brain, heart, or mind ?
- If brain – is it central or peripheral ?

Why are they dizzy?

What EXACTLY do they mean?

Dizziness is non-specific (a sensation of altered orientation in space)

Vertigo is sensation of movement

Why are they “dizzy” ?

- Is it in your head or in your legs?

Why are they dizzy ?
Brain / heart / mind ?

- **Try and exclude "heart" causes first**
  (syncope, presyncope, palpitations, postural hypotension, low BP)

- **Then try and distinguish between vestibular ("brain") and non-vestibular ("mind") causes**

Why are they dizzy ?

Vestibular (brain)	Non-vestibular (mind)
"external" spinning	spinning inside their head
"drunk/on a ship/tilting"	lightheaded/swimmy/floaty
?worse with head movement	worse with visual stimuli
vomiting and strong nausea	
auditory or other CNS symptoms	"left my body"
oscillopsia	

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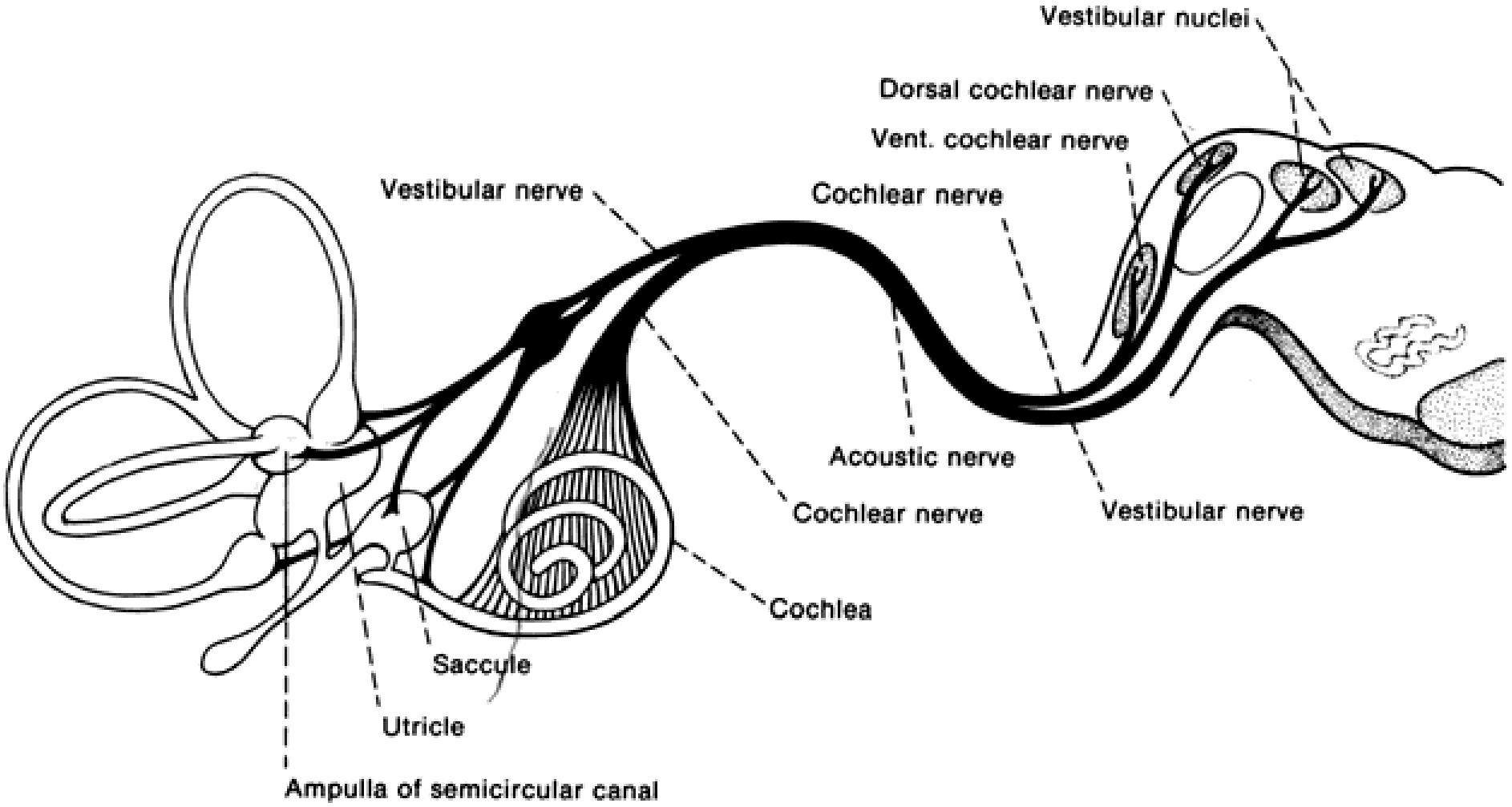
Pathophysiology of vertigo



Vestibular symptoms and signs result from an imbalance in tonic activity or a loss of reflex activity through other centres.

Pathophysiology of vertigo

- Patients who lose vestibular function bilaterally in a symmetrical fashion (*e.g.,* secondary to ototoxic drugs) usually do not develop vertigo or nystagmus because their tonic vestibular activity remains balanced.

- However, they do complain of unsteadiness and visual distortion as a result of loss of vestibulospinal and vestibulo-ocular reflex activity, respectively.

- Characteristically, such patients when walking are unable to fixate on objects because the surroundings are bouncing up and down (*oscillopsia*)

Pathophysiology of vertigo

- The *severity* of symptoms and signs with vestibular lesions depends on the *extent* of the lesion, the *rapidity* with which the functional loss occurs, and the *age* of the patient

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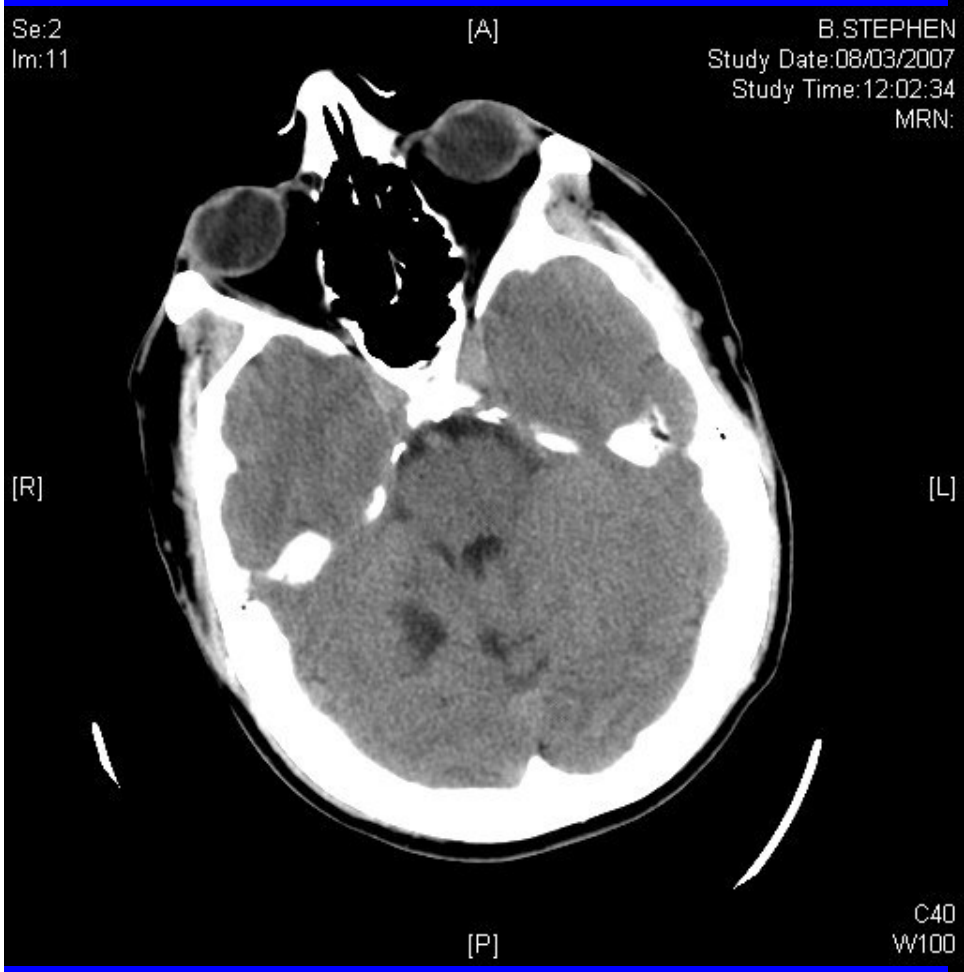
Dangerous things you should not miss

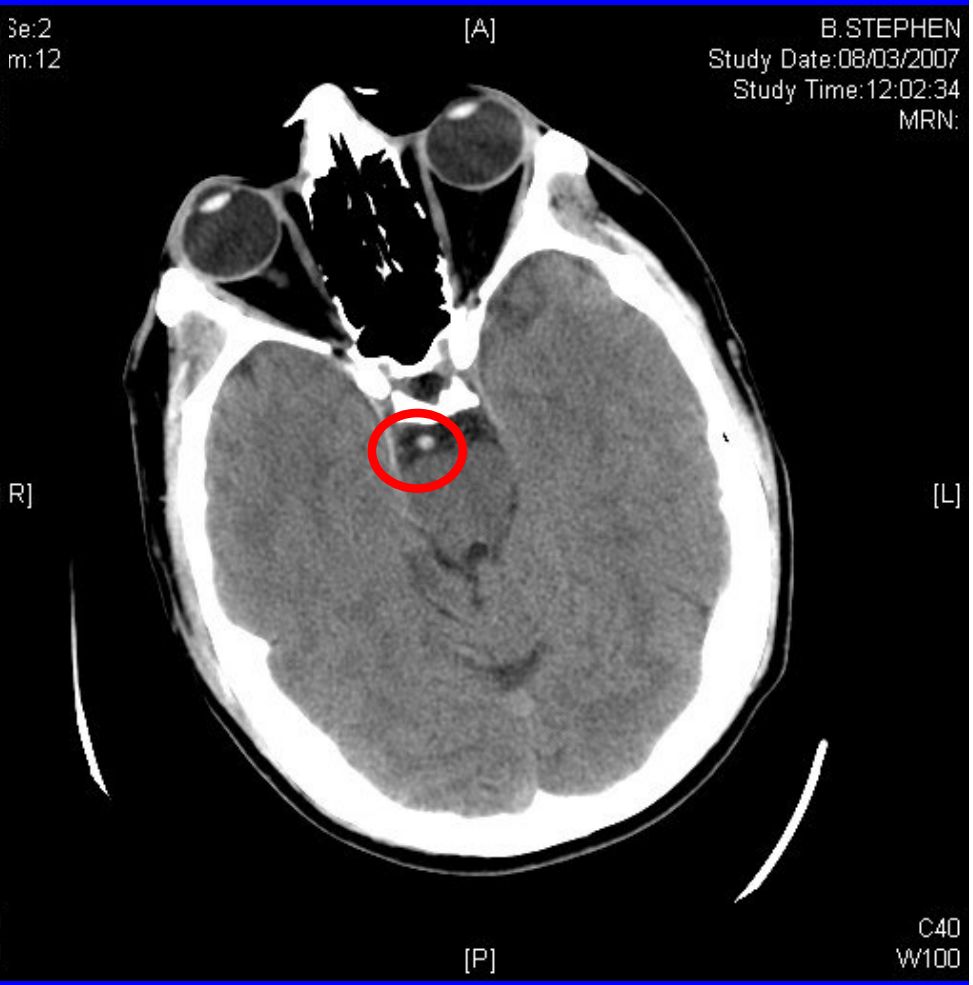
Acute "central" causes

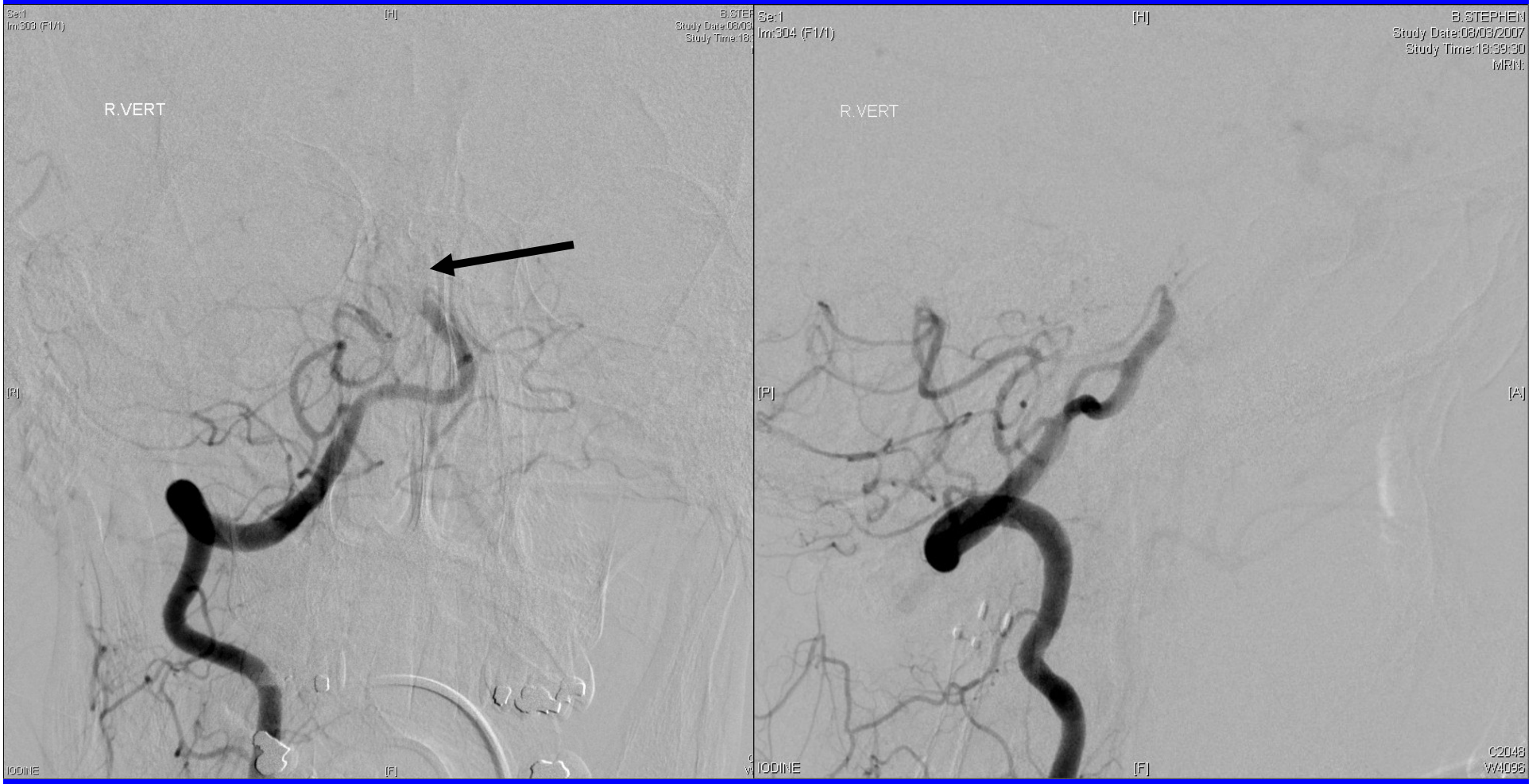
e.g., brainstem ischaemia, cerebellar infarction/haemorrhage

(also remember that nystagmus can be caused by drugs / toxins e.g., Wernickes)

CT Head from admission (12pm)



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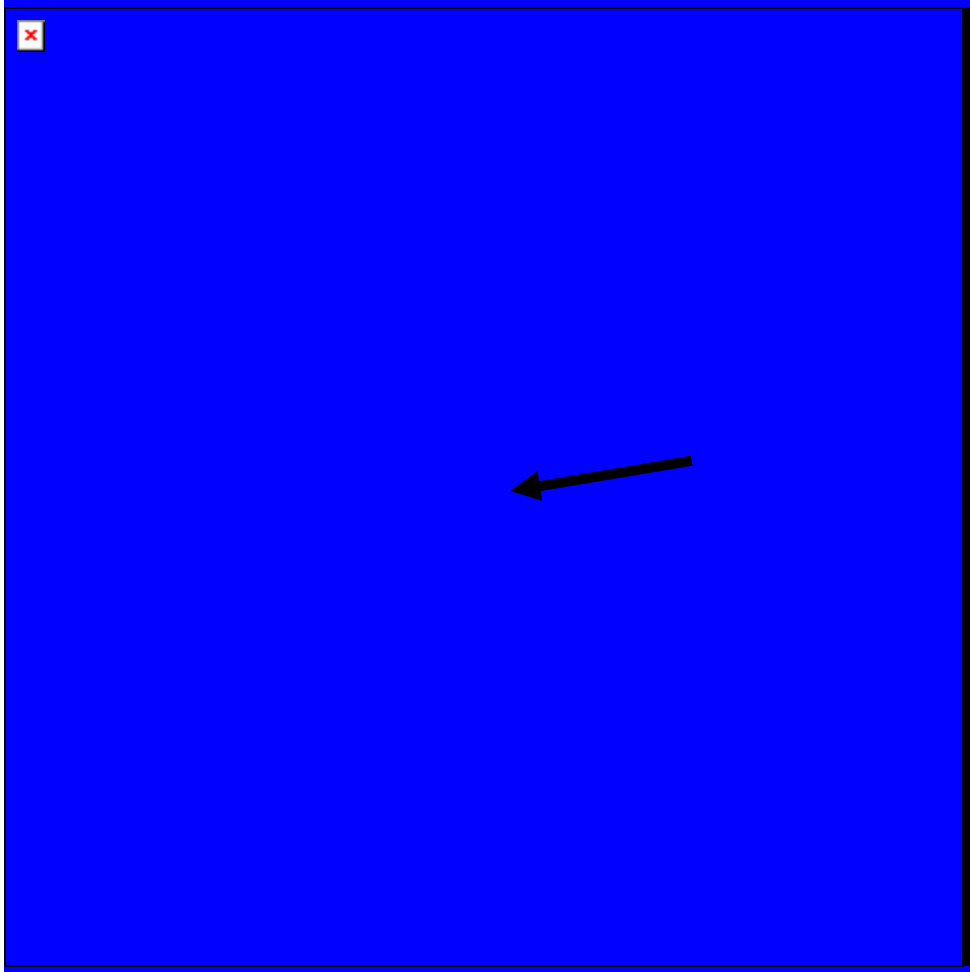

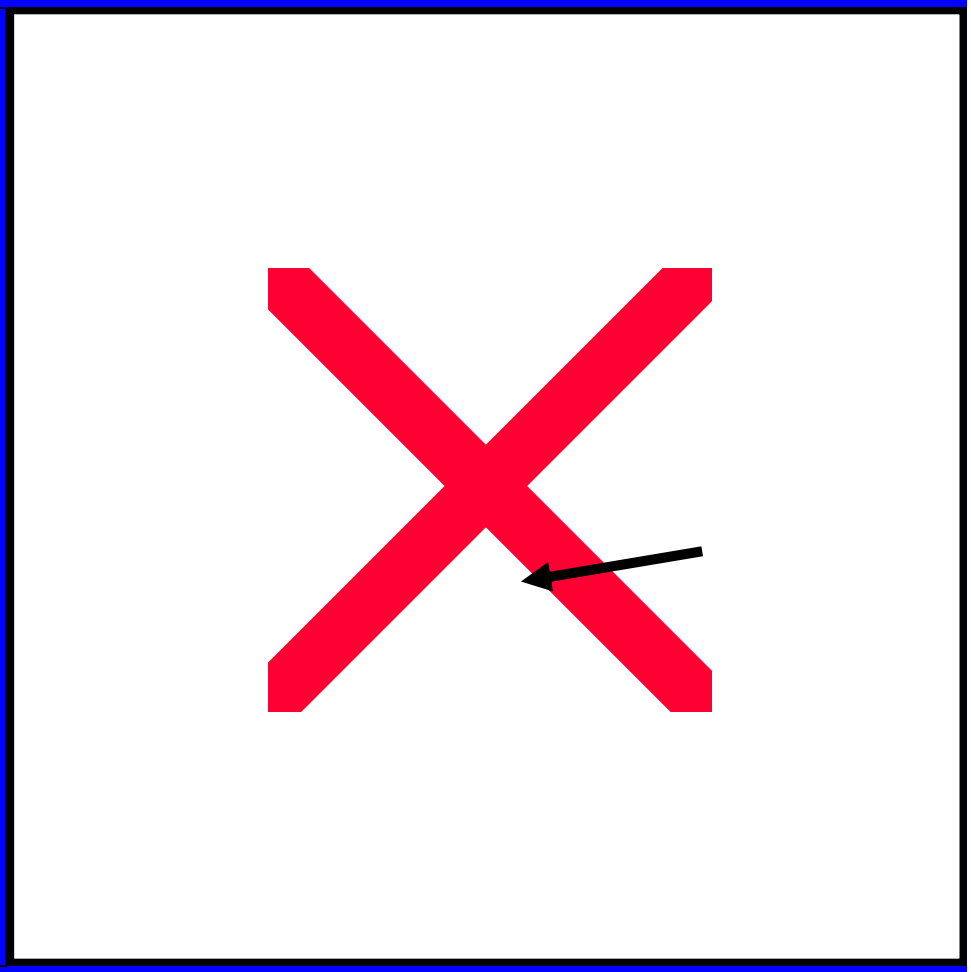

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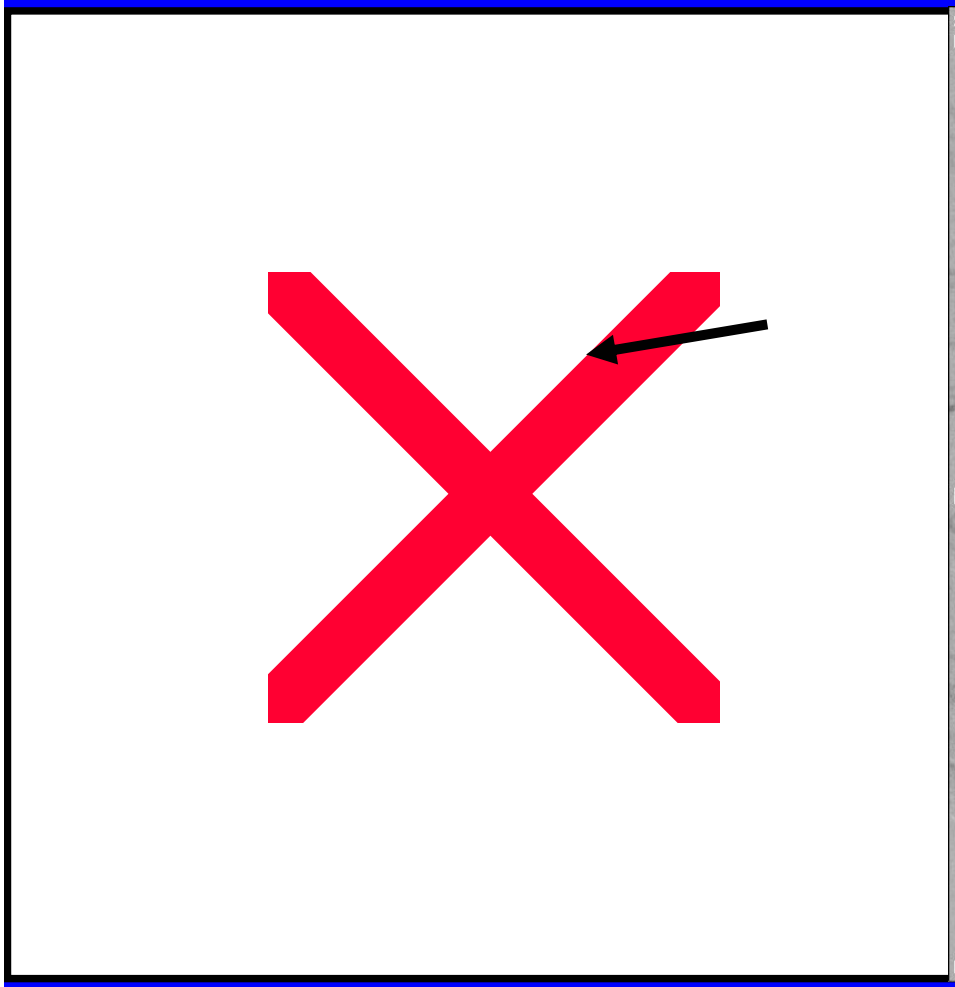
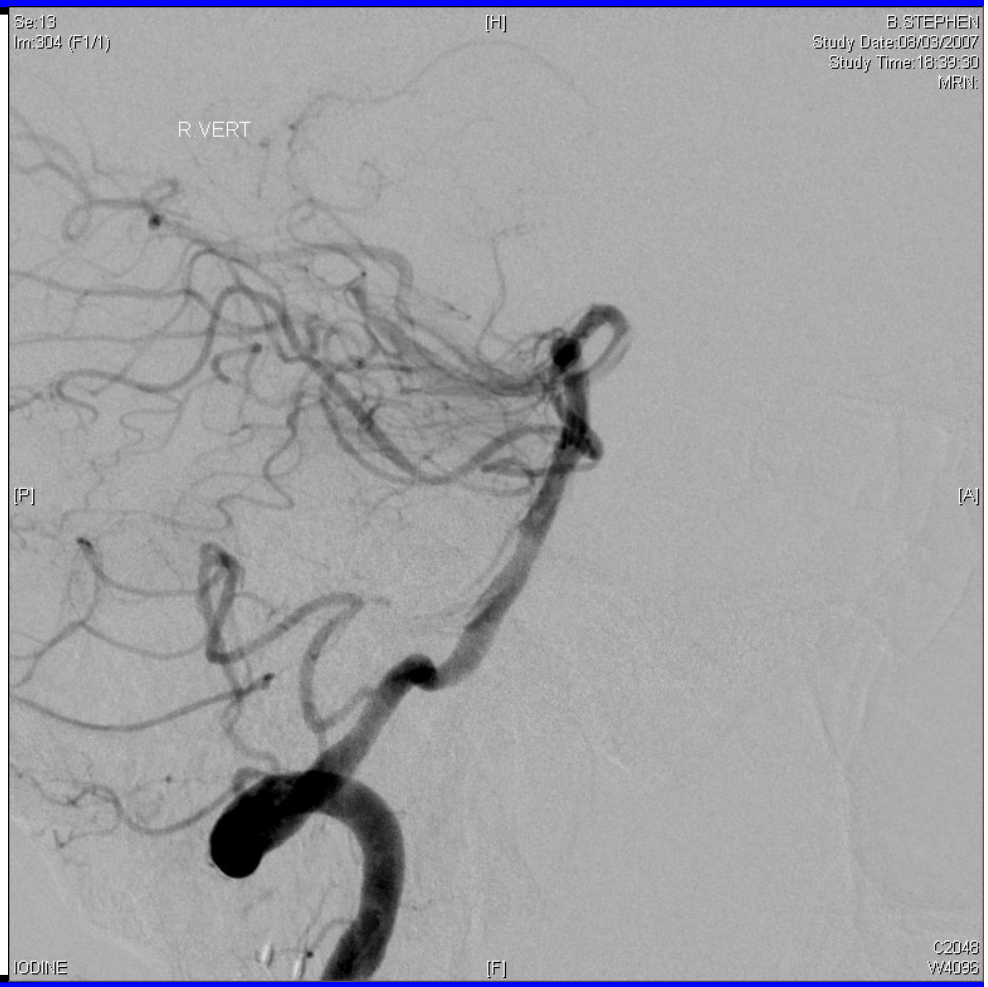
Clott aspiration and 30 mg rTPA i.a.





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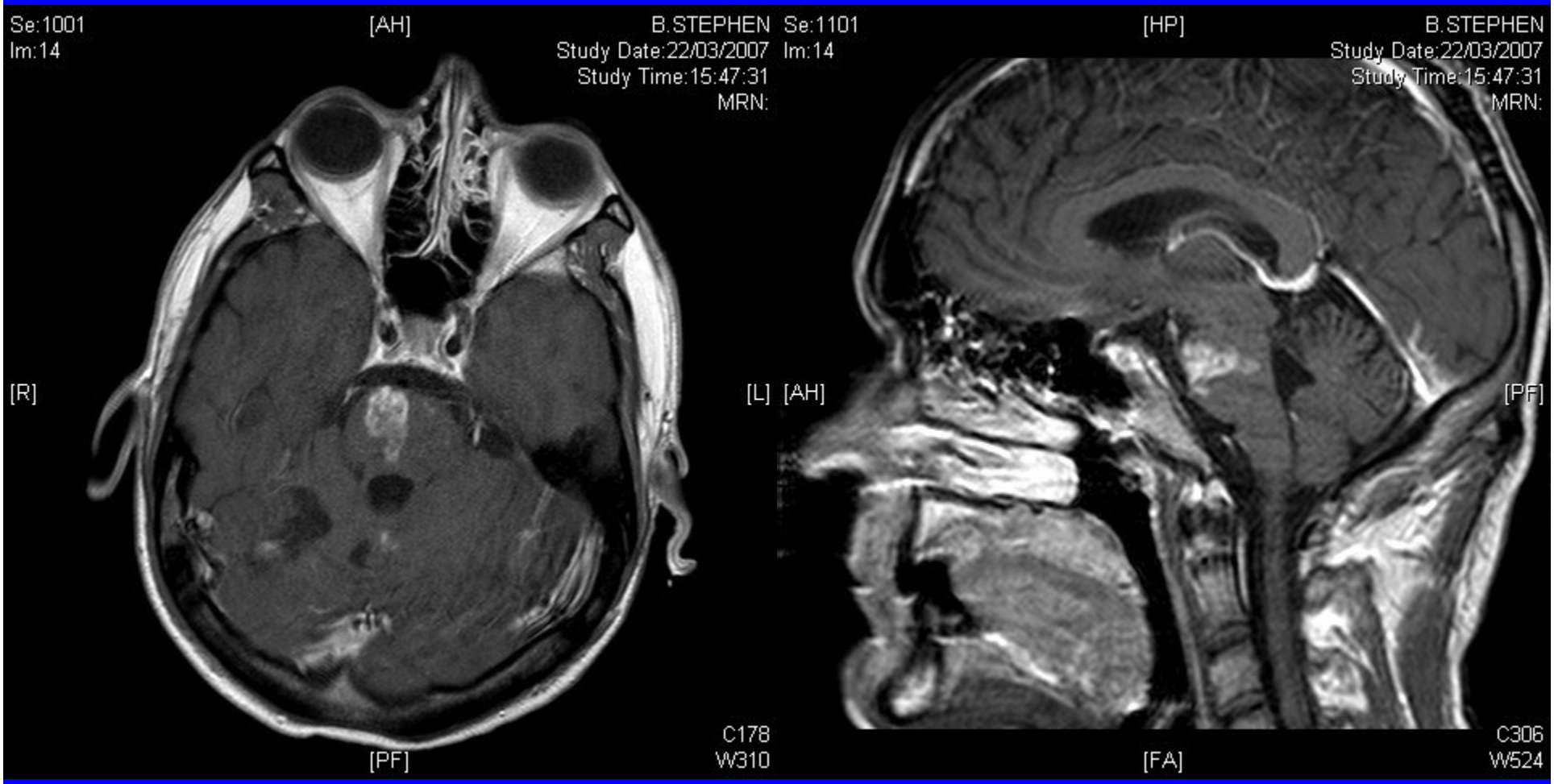
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- Pathophysiology of vertigo
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- **Can you tell "central" from "peripheral" vertigo?**
- History and examination of patients with vertigo
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So – is it central or peripheral?

- Do I call Neurology or ENT?
- Do I need to refer them today?
- What clues are there in the history and examination to help me decide ?

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Vertigo – history

- Is it episodic or continuous (NB episodic can still be "central")
- Provoking factors – be precise e.g., position

- But generally - the description of vestibular symptoms alone does not differentiate peripheral from central lesions. For this differentiation, you must rely on any associated symptoms. A DETAILED HISTORY IS THEREFORE ESSENTIAL

- Auditory symptoms (fullness, tinnitus, deafness) may be helpful but can occur in "central" causes

- Brainstem/cerebellar symptoms - (dysarthria, dysphagia, sensorimotor, diplopia, headache)

Vertigo – examination

1) Decent general neurological examination

2) Head Thrust Test – abnormal in "peripheral" lesions

Grasping the patient's head and apply brief, small-amplitude, high-acceleration head thrusts, first to one side and then to the other

The patient fixates on the examiner's nose and the examiner watches for corrective, "catch-up" saccades, which are a sign of an impaired vestibulo-ocular relex

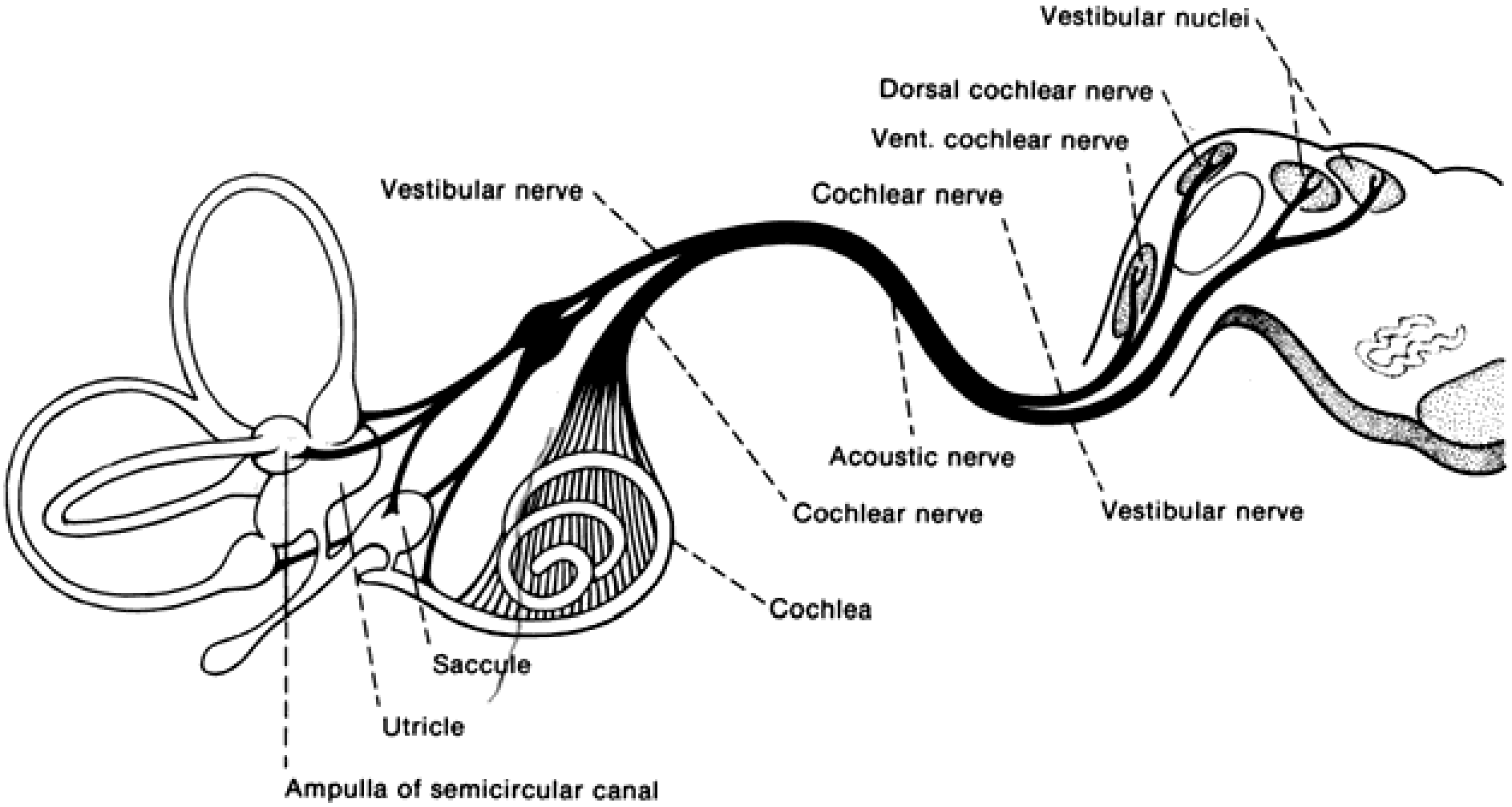
VOR impaired when the head is moved in the direction of the lesioned side

In unilateral loss of vestibular function, the response to thrusts in one direction can be easily compared with thrusts in the opposite direction. Complete or near-complete bilateral vestibular loss can also be identified because catch-up saccades will be seen in both directions

Vertigo – examination

- **Head thrust test - video**

Pathophysiology of vertigo



Why not in a central brainstem lesion?

Vertigo – examination

- **Nystagmus – What might be helpful?**
- **Spontaneous or provoked (head position)**
- **Abnormal direction = slow phase (pathological drift)**
- **Horizontal / vertical / rotatory ?**
- **Multi or unidirectional?**
- **Effect of fixation?**

Vertigo – history and examination

Is the nystagmus central or peripheral?

Central	Peripheral
No effect of fixation	better with fixation
Vertical/horizontal/rotational	horizontal + torsion
Pure rotational = always central	

Central often changes direction with changes in gaze
Peripheral does not change direction with a change in gaze

If episodic (e.g., BPPV)

no lag	lag
continuous	transient
no fatigue	fatigues

Nystagmus

- upbeating

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Who should I refer urgently?

- If one or more of the following;
- A) Acute vertigo with an intact head impulse test
- B) Acute vertigo with central signs
- C) Acute vertigo with acute headache
- D) Acute vertigo and deafness without typical Meniere's history
- E) isolated vertigo of hyperacute onset which persists - or refer to TIA clinic

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Common causes of acute vertigo

- **Acute idiopathic peripheral vestibulopathy (labyrinthitis / vestibular neuritis)**
  - Onset minutes to hours
  - Abnormal head thrust test
- **Cerebellar stroke**
  - Onset hyperacute
  - Normal head thrust, often occipital headache
- **"Missed" BPPV**
- **Bilateral vestibular failure**

Common causes of acute vertigo *and deafness*

- **Meniere's disease**
  - Ear fullness, tinnitus, fluctuating deafness, vertigo
- **Vertebrobasilar ischaemia**
  - In isolation, <0.5% vertebro-basilar strokes
- **Acoustic neuroma**
  - Gradual progressive hearing loss and tinnitus. Vertigo rare as insidious onset allows central compensation to occur for peripheral deficit
- **Labyrinthine haemorrhage**

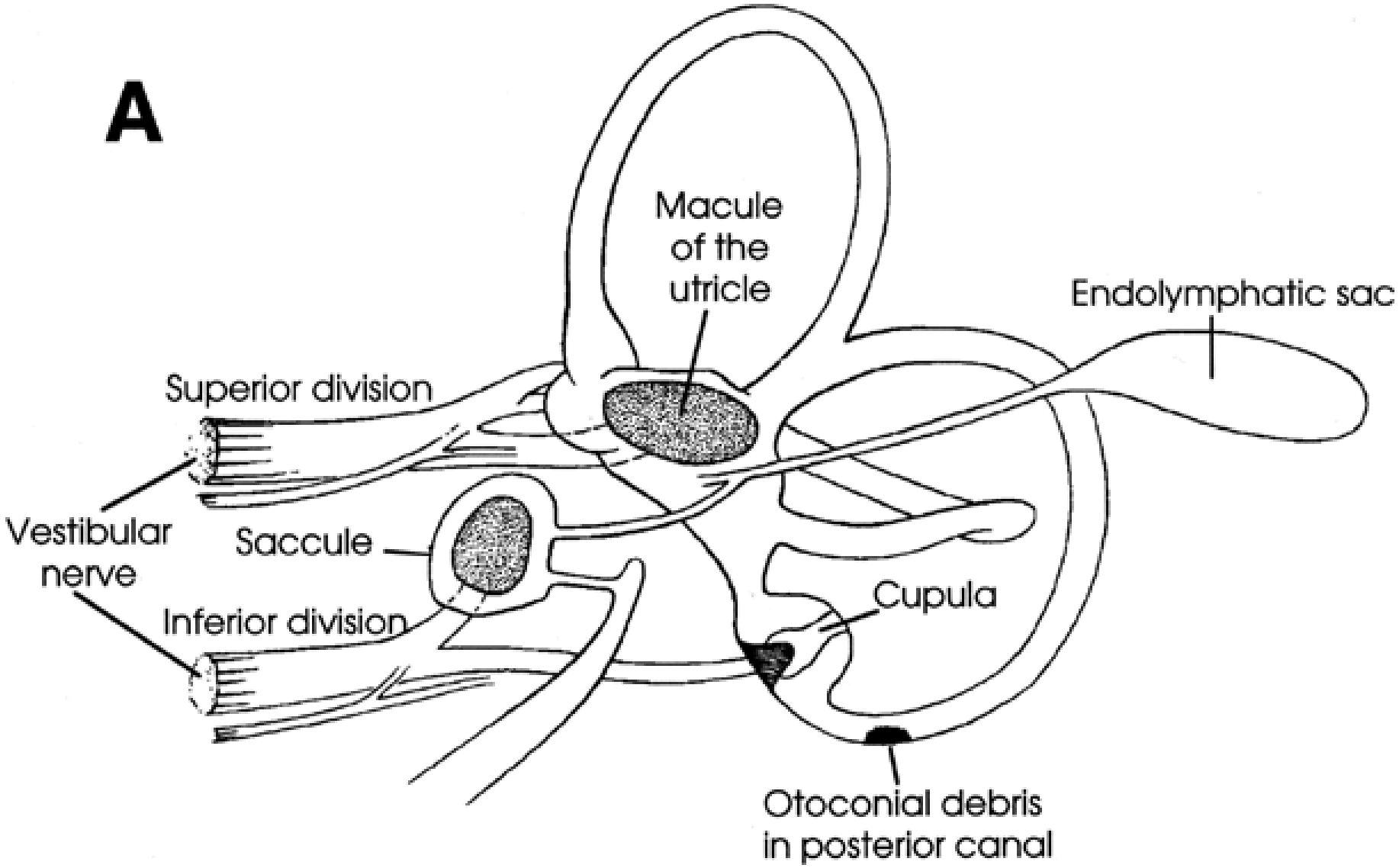
- **BPPV - benign paroxysmal positional vertigo**

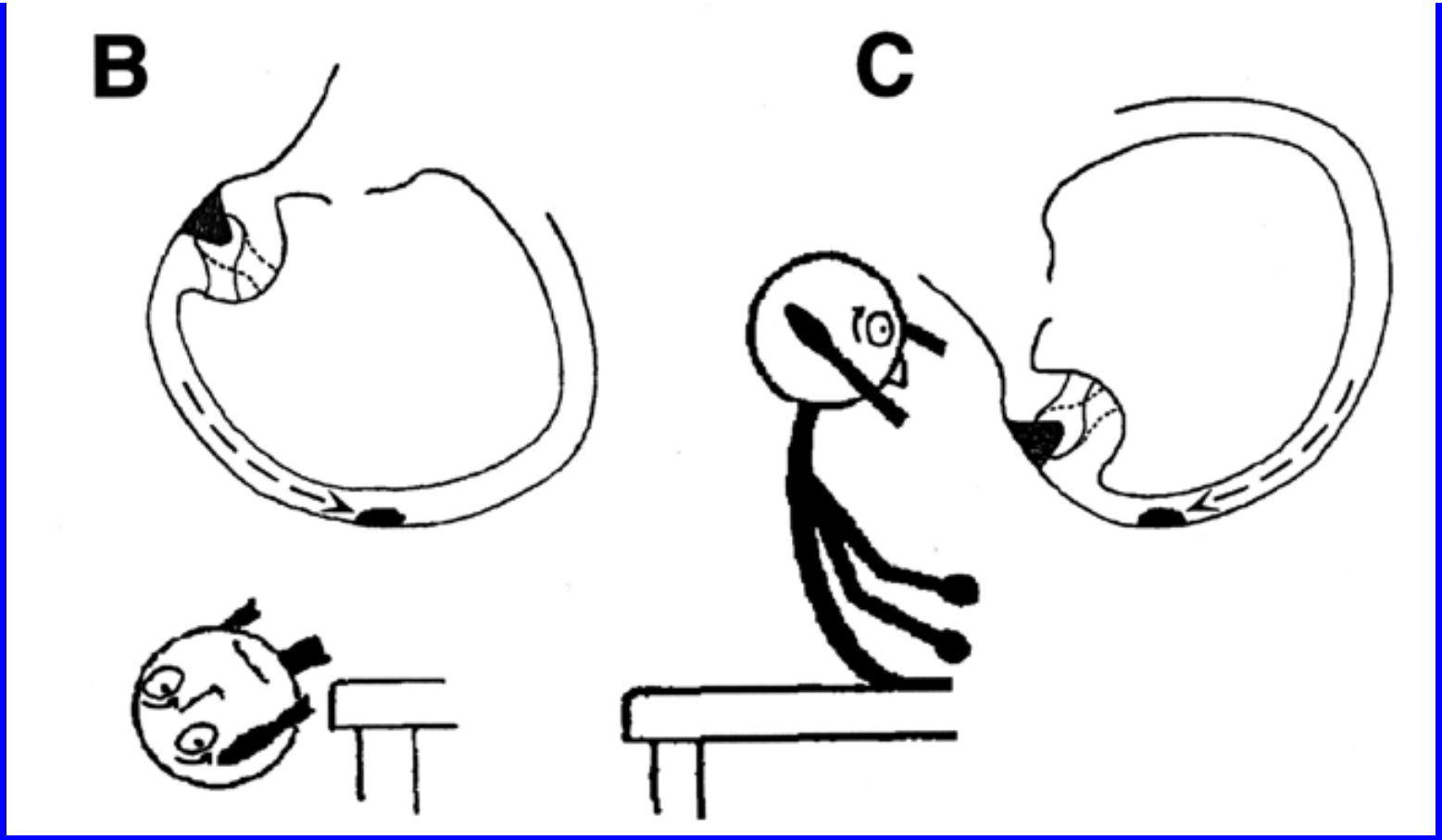
- **brief episodes of vertigo (shorter than 30 sec – count out) with position change, typically when turning over in bed, bending over, straightening up, or extending the neck back to look up**

- **The syndrome is important to recognize because in nearly all patients it can be cured with a simple bedside manouver**

- **The diagnosis is easily made at the bedside with the Dix-Hallpike positioning test so that extensive diagnostic procedures are not needed**

BPPV


A
Macule of the utricle
Endolymphatic sac
Superior division
Vestibular nerve
Saccule
Inferior division
Cupula
Otoconial debris in posterior canal



During the Dix-Hallpike test, debris moves because of gravity. This displaces of the cupula and causes nystagmus in the plane of the posterior semicircular canal.

On sitting up, debris returns to its original position, causing a burst of nystagmus in the reveres direction

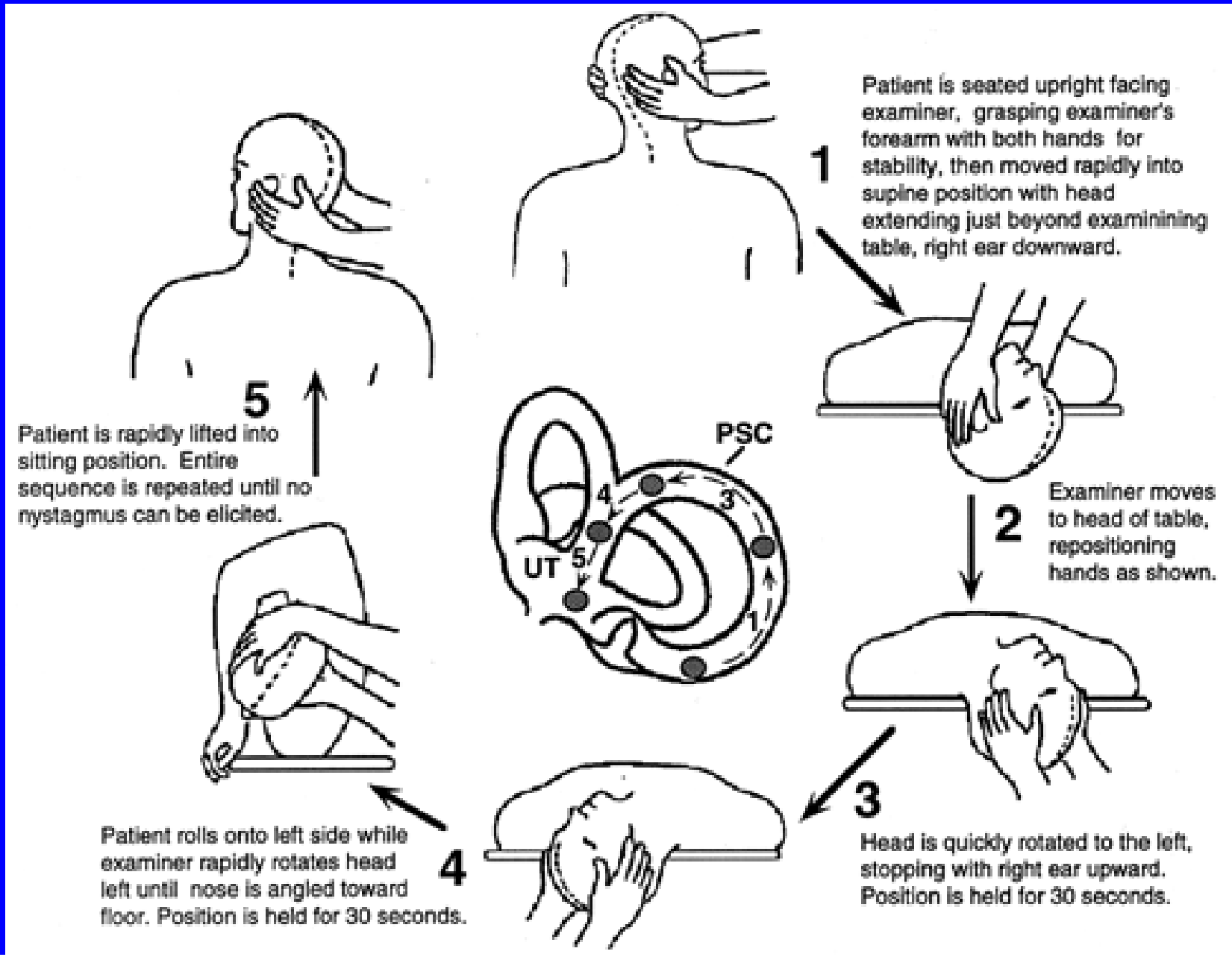
Dix-Hallpike Manouver

- Episodic positional vertigo CAN be central – does not have to be BPPV
- BPPV has specific diagnostic features
- video
- Lag (if not - it's not BPPV)
- Usually torsional down beat
- Transient and fatigues
- Reverses on sitting up

Dix-Hallpike manouver

- video

Epley Manouver



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Summary

- Is it brain (central or peripheral), heart or mind?
- If brain – can we tell if it's central or peripheral?
- Act quickly if you think it's central (hyperacute onset, central symptoms and signs, normal head thrust test, headache)
- Make sure it's typical for BPPV….

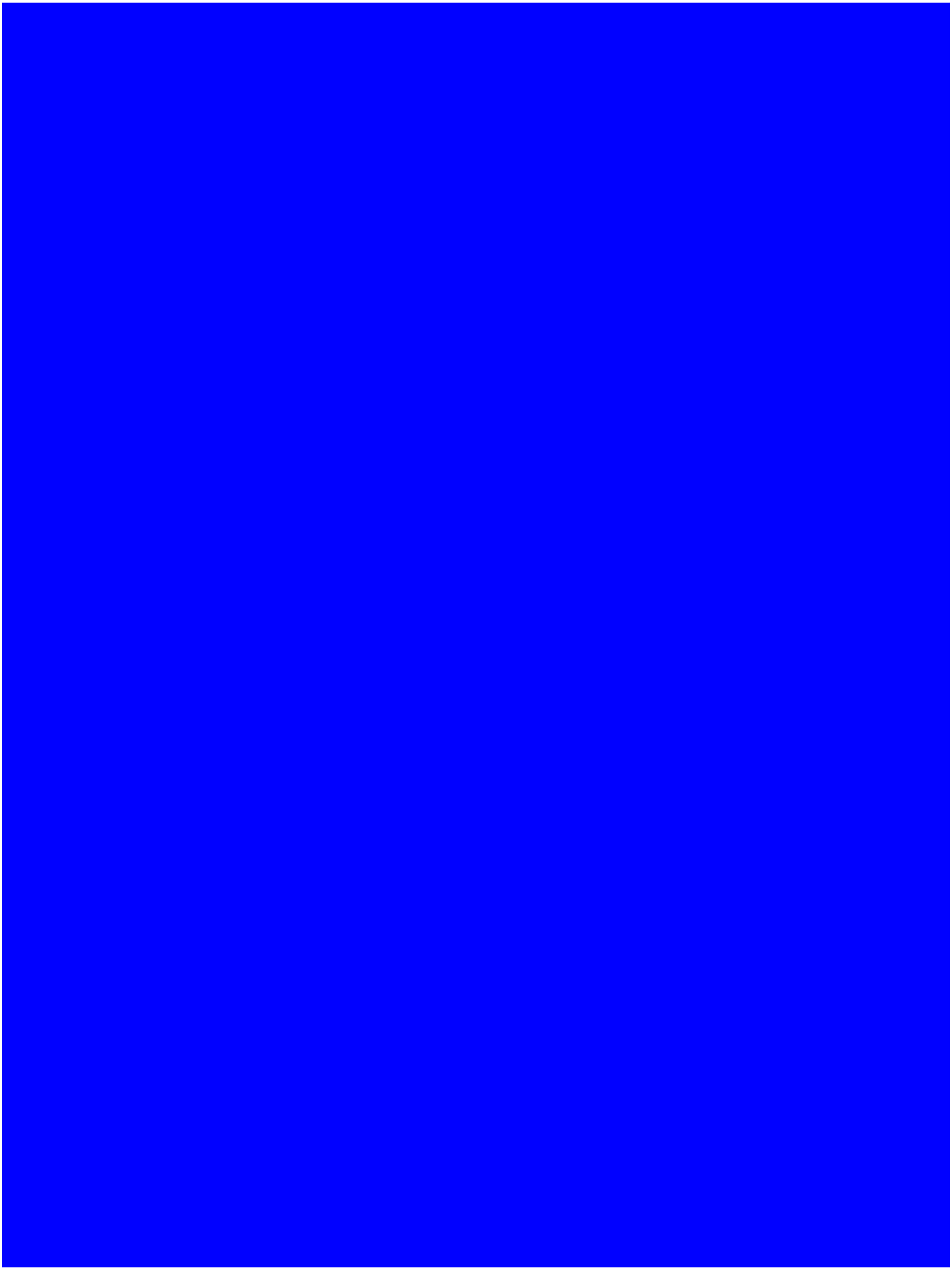
Example Case Again

- 52 yr man
- Presents 24 hours after the onset of acute vertigo which occurred as he bent down in the shower.
- Vertigo persisted + nausea and vomiting
- Previously well

- What other questions do you ask?
- What do you look for on examination
- Are you going to scan him urgently?

Thank you

allysonparry@hotmail.com



If you want to go to sleep now..

- For patients presenting with TRUE acute vertigo
- If definite BPPV or definite Meniere's – you could send home from A&E
- All others I would really think hard about, before sending home quickly

- **Video - oscillopsia**